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## Intraprofessional Collaboration in Learning Evidence-Based Practice

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# Intraprofessional Collaboration in Learning Evidence-Based Practice

## Abstract

Little is known about how collaborative curricular activities can help students learn about scientific evidence in occupational therapy (OT) and occupational therapy assistant (OTA) programs. We created and measured collaborative learning in evidence-based practice activities to enhance partnership building and intraprofessional collaboration among students in OT and OTA programs. Thirty-three OT students and 26 OTA students enrolled in a didactic course (Phase I) and an intraprofessional collaborative learning activity (Phase II) participated in this quasi-experimental repeated measure study. The students' ability of how to read scholarly articles and their perceived importance and perceived ability to engage in intraprofessional collaboration were examined at three time points. Improvements were found in the OT students' perceived importance of intraprofessional roles/responsibilities and the OTA students' perceived ability to engage in intraprofessional communication after completing the Phase I didactic course. Both the OT and OTA students' perceived ability to work as a team, identify their roles/responsibilities, communicate with peers, and their ability to read scholarly articles improved after the Phase II intraprofessional collaboration. Students valued the opportunity to gain collaboration experience and share different perspectives. They indicated they would have preferred to spend more time on the activities. The findings suggest that targeted learning activities can improve OT and OTA students' ability to engage in evidence-based practice and their perceived importance and ability to engage in intraprofessional collaboration. Effective partnerships and intraprofessional collaboration are best introduced within academic programs.

## Keywords

Evidence-based practice, intraprofessional collaboration, competencies

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### ABSTRACT

Little is known about how collaborative curricular activities can help students learn about scientific evidence in occupational therapy (OT) and occupational therapy assistant (OTA) programs. We created and measured collaborative learning in evidence-based practice activities to enhance partnership building and intraprofessional collaboration among students in OT and OTA programs. Thirty-three OT students and 26 OTA students enrolled in a didactic course (Phase I) and an intraprofessional collaborative learning activity (Phase II) participated in this quasi-experimental repeated measure study. The students' ability of how to read scholarly articles and their perceived importance and perceived ability to engage in intraprofessional collaboration were examined at three time points. Improvements were found in the OT students' perceived importance of intraprofessional roles/responsibilities and the OTA students' perceived ability to engage in intraprofessional communication after completing the Phase I didactic course. Both the OT and OTA students' perceived ability to work as a team, identify their roles/responsibilities, communicate with peers, and their ability to read scholarly articles improved after the Phase II intraprofessional collaboration. Students valued the opportunity to gain collaboration experience and share different perspectives. They indicated they would have preferred to spend more time on the activities. The findings suggest that targeted learning activities can improve OT and OTA students' ability to engage in evidence-based practice and their perceived importance and ability to engage in intraprofessional collaboration. Effective partnerships and intraprofessional collaboration are best introduced within academic programs.

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## **Introduction**

The American Occupational Therapy Association (AOTA, 2018) and the Accreditation Council for Occupational Therapy Education (ACOTE, 2018) suggest that clients benefit when occupational therapists (OT) and occupational therapy assistants (OTA) work collaboratively in delivering occupational therapy services. Intraprofessional education is defined as “an educational activity that occurs between two or more professionals within the same discipline, which encourages participants to work together, act jointly, and cooperate” (Jung et al., 2010, p. 235).

### **Intraprofessional Practice among Occupational Therapy Practitioners**

Dillon (2002) found that successful collaboration is based primarily on effective communication, mutual respect, and professionalism. Diamant and colleagues (2018) found that compared to OT practitioners, OTA practitioners place greater value on knowing when to seek out information-support, exercising flexibility to work effectively with different OT partners, and engaging in ongoing professional development. In contrast, OT practitioners place greater value on sharing ideas and opinions with OT team partners and obtaining timely, sensitive, and instructive feedback.

Generating opportunities for students to collaborate within academic programs increases their ability to collaborate as future practitioners. Research shows that intraprofessional relationships between OT and OTA students can result in positive teamwork and achievement of client-centered objectives (Johnston et al., 2013). Most intraprofessional research has been conducted during fieldwork experiences. For example, Jung and colleagues (2008) comprised focus groups of OT and OTA students to explore the students’ understanding of intraprofessional issues and OT service delivery during fieldwork placement. They found that students identified the importance of developing intraprofessional relationships through activities that required shared learning. Barnes and colleagues (2016) placed six pairs of OT and OTA students on a Level II collaborative fieldwork rotation. They found this partnership improved all students’ abilities to understand, articulate, and engage in the process of intraprofessional collaboration.

Studies conducted outside of fieldwork can be used to help develop meaningful didactic intraprofessional education experiences. Dennehy (2017) examined the intraprofessional collaboration skills of 64 OT and OTA students from four disparate programs across a full semester. She found that the students unanimously preferred face-to-face interactions over distance applications. Learning activities that include partnering appear to benefit the development of intraprofessional collaboration. Studies showed that collaborative partnerships enhance teamwork to produce effective services (Dillon, 2002; Johnston et al., 2013). Scheerer (2002) developed the Partnering Model requiring OT and OTA students to interact and collaborate during their educational experience. The author concluded that engaging students in interactions, teamwork, and collaboration promotes a lifetime habit of partnering as practitioners.

Developing learning activities that promote peer teaching (Sunggingwati, 2018) encourages interprofessional collaboration. A recent systematic review showed that peer teaching enhanced cooperative learning and communication by expanding understanding of the topic under study (Gazula et al., 2017). Additionally, a landmark reviewed study suggested using peer teaching in conjunction with other learning methods because it enhances active learning and facilitates communication and interaction skills (Goldschmid & Goldschmid, 1976).

### **Evidence-Based Practice**

Evidence-based practice (EBP) is the conscientious use of current best evidence in conjunction with therapists' clinical experience and clients' values (Brown, 2017). EBP is at the forefront of change in today's health care. However, the research-to-practice gap is an ongoing concern in OT that needs to be addressed (Juckett et al., 2019). Results of a recent study evaluating the use of EBP among healthcare professionals revealed nurses and OT particularly need to improve their use of EBP (Boström et al., 2018).

The specific teaching of EBP content has become an integral part of OT and OTA curricula mandated by the ACOTE standards (ACOTE, 2018). These standards require programs to develop learning activities that promote intraprofessional collaboration and students to develop EBP skills. Learning activities that combine both aims could offer an efficient means to achieve these goals. This learning type is beneficial if it includes the essential lessons learned from previous research (e.g., face-to-face meetings, partnerships, teamwork, and peer teaching).

Therefore, the purpose of this study was to develop a two-phase learning module to 1) enhance intraprofessional collaboration between OT and OTA students, and 2) improve the students' ability to read and interpret external scientific evidence. We hypothesized that with the intraprofessional collaborative learning module, OT and OTA students would benefit from improved perceived importance of intraprofessional collaboration, improved perceived ability to engage in intraprofessional collaboration, and improved ability to read and use scientific articles.

## **Methods**

### **Study Design**

The study used a repeated-measures research design with two phases (Phase I: Five weeks of didactic coursework; Phase II: Four weeks of intraprofessional collaborative learning activity) and three data collection time points. Students were surveyed at the beginning of the trimester (T1), the end of Phase I (T2), and the end of Phase II (T3).

### **Participants**

A convenience sample of OT and OTA students enrolled in EBP-related courses (*Evidence-Based Practice* for OT students and *Professional Issues in Occupational Therapy* for OTA students) at one Florida University was invited to participate. The *Evidence-Based Practice* course was designed to provide an overview of quantitative and qualitative research processes and allow OT students to explore different research

designs, measurement types, and data collection procedures. Some sample topics included: Introduction to critically appraised papers, choosing interventions for practice, evaluating measurement studies, descriptive and predictive research design, and involving clients and families in clinical decision-making. Principles of EBP were incorporated throughout the curriculum to help students assess the state of evidence and direct decision making in OT practice. In contrast, the *Professional Issues in Occupational Therapy* course for OTA students was designed more broadly to incorporate and reinforce overall knowledge and reasoning of OT components and prepare OTA students for Level II fieldwork. In this course, OTA students had opportunities to participate in OT research and quality improvement programs. They also learned the skills needed to help establish and maintain an OT clinic, advocate for the profession, and participate in several case studies involving simulation labs. Some sample topics for this course included: Research and OTA (e.g., finding relevant scholarly articles, APA citations, and plagiarism, etc.), designing/equipping/maintaining an OT clinic, quality assurance and continuous quality improvement, chart review and OT evaluation, and simulation lab with standardized patients. All students were informed about the study's purposes and procedures before participating. Participation was voluntary.

### **Measurements**

Two tools, a subjective intraprofessional survey and an objective EBP ability test, were used to collect data on the three outcome measures (*perceived importance* of intraprofessional collaboration, *perceived ability* to engage in intraprofessional collaboration, and ability to read and use scientific articles). The survey measuring *perceived importance* and *perceived ability* was a modified version of Diamant and colleagues' (2018) survey based on the Core Competencies for Interprofessional Education Collaborative (IPEC, 2011). The original survey included 20 competency items in four domains: Intraprofessional Teamwork, Roles/Responsibilities for Collaborative Practice, Communication for Intraprofessional Practice, and Values/Ethics for Intraprofessional Practice. The students were asked to rate each competency's perceived importance using a 3-point Likert scale (1 = less important, 2 = important, 3 = very important). This survey was previously verified for use in evaluating the perceived importance of competencies needed for effective collaboration among OT and OTA practitioners (Diamant et al., 2018). The survey underwent a face validity testing with a representative sample of two OTs and two OTAs to verify the appropriateness of the content, the length of time to complete the survey, and the clarity of the wording of each item (Diamant et al., 2018). Dr. Diamant also presented this work at the 2015 Washington State Occupational Therapy Association Conference. Further content validity feedback was conducted with 15 OT and OTA colleagues who attended the conference to refine the survey items (Diamant et al., 2018). For the current study, we modified the survey by adding *perceived ability* to engage in intraprofessional collaboration for each competency using the same 3-point Likert scale (1 = not very able, 2 = able, 3 = very able).

The researchers designed an EBP ability test comprised of five multiple-choice, scenario-based questions assessing student comprehension and utilization of basic information from a typical research paper (i.e., Abstract, Introduction, Methods, Results, Discussion, etc.). Each question had five choices, which were scored as either “correct” (students select the right answer) or “incorrect” (students select the wrong answer). One sample question from T1 asked, “Imagine you’re writing your research paper on the topic of mirror therapy for improving movement after stroke. To help you through the research writing process, you’ll need to utilize different components of scholarly materials in certain ways. Mirror therapy may be something you don’t know much about yet. When doing beginning research on this topic, which part of a scholarly source would be most relevant?” The correct percentages of each ability test were calculated and used as the dependent variable across time. Due to the repeated measure design, three different scenarios were developed to avoid recall bias. The first author developed the EBP ability test; two other licensed OT experts who were also experienced educators reviewed the test to ensure its relevance and face validity.

### **Procedures**

The study received Institutional Review Board approval (#OT32819) before data collection. Prior to Phase I (T1), all students completed the EBP ability test and the perceived importance and perceived ability survey of the intraprofessional collaboration. In Phase I, OT and OTA students attended regular but separate didactic courses; they did not learn in the same class. OTA students also were assigned to find three peer-reviewed research articles relevant to a designated clinical problem or diagnosis. After completing Phase I (T2), all students again completed the EBP ability test and both the perceived importance and perceived ability survey of the intraprofessional collaboration.

In Phase II, OT and OTA students participated in a 4-week collaborative learning experience while the didactic courses continued. Students were randomly arranged in groups with one OTA student and one to two OT students per group in this phase. The articles selected by the OTA students in Phase I were shared with their OT student partners at the beginning of Phase II. The OT and OTA students were then instructed to work individually for three weeks to evaluate each article using the Currency, Relevance, Authority, Accuracy, and Purpose (CRAAP) Test (California State University-Chico, 2010), a checklist used to evaluate the credibility of scientific evidence. Clear instructions and examples were provided in class to help students understand the concepts and strategies of reading and evaluating scholarly articles before engaging in this collaborative activity. A total of 60-minute in-class discussion was scheduled in week 4 for the face-to-face intraprofessional collaboration. The OT and OTA students worked jointly to review and compare their CRAAP Test for the selected articles. The CRAAP test was used as a discussion guide; the students used peer teaching approach and discussed their individual scoring differences and rationales with the CRAAP test until consensus was reached. All students completed the EBP ability test and both the perceived importance and perceived ability survey of the intraprofessional collaboration at the end of Phase II (T3). The students also provided a written evaluation for two open-ended questions: “What’s the most beneficial part of this collaboration?” and “What’s the least beneficial part of this collaboration?”

Last, the students were asked to designate whether they would recommend continuing this intraprofessional collaboration activity for future cohorts. The written evaluation was used for qualitative analysis for this study.

### **Data Analysis**

Data were collected in paper form and entered into the IBM SPSS Statistics software (Version 26, IBM Corp) for analysis. The subjective intraprofessional survey and the objective EBP ability test collected from T1 to T3 were used for quantitative analyses. The two open-ended written evaluation collected at T3 was used for qualitative analysis.

For the demographics, the means and standard deviations were calculated for continuous variables (age); the frequencies and percentages were calculated for categorical variables (gender, educational level, work status, and Level I and Level II fieldwork completed). The two-way ANOVA was used to examine profession (OT students vs. OTA students, between-subjects factor) and time (T1 to T3, within-subjects factor) and their interaction for the EBP ability test. The post hoc pairwise t-test (1-sided) was used to evaluate the difference across time with Bonferroni correction of  $p < .017$  (.05/3). Additionally, the effect size (Cohen's  $d$ ) was calculated to ensure the results were independent of sample size and quantified the magnitude of the EBP ability difference across time (Laken, 2013), with the thresholds: .20 = small, .50 = moderate, and .80 = large (Cohen, 1988).

Friedman's ANOVA (Simpson, 2015) was conducted to assess differences in the *perceived importance* and *perceived ability* across time with  $p < .05$ . Wilcoxon signed rank test was used to examine further the pairwise comparison of difference across time with Bonferroni adjustment of  $p < .017$ . Open-ended feedback was analyzed using content analysis. The researchers coded each comment for themes and recorded frequency. Coding disagreements were discussed until consensus was achieved.

### **Results**

The study participants initially included 33 OT and 27 OTA students. However, one OTA student did not complete the T2 and T3 survey and was excluded from the final analysis (see Table 1).



**Table 1***Participants' Demographics*

|  | <b>OT students (N = 33)</b> | <b>OTA students (N = 26)</b> |
|--|-----------------------------|------------------------------|
|  | Mean (SD)                   | Mean (SD)                    |
| <b>Age</b>                             | 24.12(2.85)                 | 30.04 (9.71)                 |
|  | <i>n (%)</i>                | <i>n (%)</i>                 |
| <b>Gender</b>                          |                             |                              |
| Male                                   | 5 (15.2)                    | 3 (11.5)                     |
| Female                                 | 28 (84.8)                   | 23 (88.5)                    |
| <b>Highest Educational Degree</b>      |                             |                              |
| High school diploma or equivalent      | -                           | 12 (46.2)                    |
| Associate or technical degree          | -                           | 6 (23.1)                     |
| Bachelor's degree                      | 33 (100)                    | 8 (30.8)                     |
| <b>Work Status</b>                     |                             |                              |
| Employed full-time                     | -                           | -                            |
| Employed part-time                     | 19 (57.6)                   | 17 (65.4)                    |
| Currently is not working               | 14 (42.4)                   | 9 (34.6)                     |
| <b>Level I FW placements completed</b> |                             |                              |
| 1                                      | 29 (87.9)                   | -                            |
| 2                                      | -                           | 1 (3.8)                      |
| 3                                      | -                           | 24 (92.3)                    |
| 4                                      | -                           | 1 (3.8)                      |
| 5                                      | 4 (12.1)                    | -                            |
| <b>Level II FW completed</b>           |                             |                              |
| 0                                      | 29 (87.9)                   | 26 (100)                     |
| 1                                      | -                           | -                            |
| 2                                      | 4 (12.1)                    | -                            |

### EBP Ability Changes

The time effect is significant, while the time-by-profession interaction is insignificant. The post hoc pairwise t-test results are shown in Table 2. At baseline, OT students demonstrated a higher mean than OTA students. Both cohorts had a non-significant drop in scores at T2. Then both cohorts' scores increased between T2 and T3, with the OT students' increase reaching a level of significance ( $t = -2.55$ ,  $p = .006$ ) and small effect size ( $d = .45$ ), while the OTA students' increase was not significant ( $t = -1.28$ ,  $p = .103$ ) and showed a small effect size ( $d = .24$ ).

**Table 2**

*One-tailed Pairwise t-test Comparison of the EBP Ability*

| Profession | Time (I) |       |       | Time (J) |       |       | Mean Difference (I-J) | Std. Error | t     | Sig.   |
|------------|----------|-------|-------|----------|-------|-------|-----------------------|------------|-------|--------|
|            | Mean     | SD    |       | Mean     | SD    |       |                       |            |       |        |
| OT         | 1        | 80.61 | 23.18 | 2        | 80.00 | 22.36 | .61                   | 3.62       | .17   | .434   |
|            | 1        | 80.61 | 23.18 | 3        | 90.91 | 10.11 | -10.30                | 4.13       | -2.49 | .008** |
|            | 2        | 80.00 | 22.36 | 3        | 90.91 | 10.11 | -10.91                | 4.27       | -2.55 | .006** |
| OTA        | 1        | 66.15 | 23.85 | 2        | 63.85 | 23.34 | 2.31                  | 4.08       | .56   | .287   |
|            | 1        | 66.15 | 23.85 | 3        | 70.00 | 21.35 | -3.85                 | 4.66       | -.83  | .206   |
|            | 2        | 63.85 | 23.34 | 3        | 70.00 | 21.35 | -6.15                 | 4.81       | -1.28 | .103   |

\*\*  $p < .017$ .

### Perceived Intraprofessional Collaboration Changes

Prior to the study (T1), OT and OTA students were similar in all the four domains of intraprofessional collaboration competency ( $p$  values range from .127 to .467 for *perceived importance*;  $p$  values range from .115 to .855 for *perceived ability*). The *intraprofessional collaboration* changes from T1 to T3 are presented in Table 3. After Phase I, the scores increased in OT students' *perceived importance of Roles/Responsibility* ( $Z = -2.48$ ,  $p < .001$ ) and OTA students' *perceived ability on Communication* ( $Z = -2.17$ ,  $p < .001$ ). A comparison of T1 to T3 survey results revealed significant increases in *perceived importance* in Teamwork (OT  $Z = -3.31$ ,  $p < .001$ ; OTA  $Z = -2.54$ ,  $p < .001$ ) and Roles/Responsibilities (OT  $Z = -2.77$ ,  $p < .001$ ; OTA  $Z = -2.12$ ,  $p < .001$ ) for both OT and OTA students after Phase II. Significant increases in *perceived ability* from T1 to T3 was seen in Teamwork for OT students ( $Z = -3.57$ ,  $p < .001$ ), and in Roles/Responsibilities (OT  $Z = -2.66$ ,  $p < .001$ ; OTA  $Z = -2.68$ ,  $p < .001$ ) and Communication (OT  $Z = -2.95$ ,  $p < .001$ ; OTA  $Z = -3.55$ ,  $p < .001$ ) for both OT and OTA students. Interestingly, increased scores in *perceived ability* from T2 to T3 were significant for Values/Ethics for OT students ( $Z = -2.07$ ,  $p < .001$ ) and Teamwork for OTA students ( $Z = -2.10$ ,  $p < .001$ ).

**Table 3***Perceived Importance and Perceived Ability of Intraprofessional Collaboration Across Time*

|             |            | Time                   | Time            | Time            | Friedman<br>Chi-<br>squared<br>( <i>p</i> ) | Pairwise Comparison |          |             |          |             |          |         |
|-------------|------------|------------------------|-----------------|-----------------|---|---------------------|----------|-------------|----------|-------------|----------|---------|
|             |            | 1                      | 2               | 3               |   | T1 - T2             |          | T1 - T3     |          | T2 - T3     |          |         |
|             |            | Mean<br>(SD)           | Mean<br>(SD)    | Mean<br>(SD)    |   | Z                   | <i>p</i> | Z           | <i>p</i> | Z           | <i>p</i> |         |
| O<br>T      | Importance | Teamwork               | 19.39<br>(2.02) | 20.21<br>(1.58) | 20.55<br>(1.37)                             | 13.42<br>(.001*)    | -2.13    | .030        | -3.31    | <.001*<br>* | -1.62    | .121    |
|             |            | Roles/Responsibilities | 10.97<br>(1.33) | 11.58<br>(1.03) | 11.64<br>(.90)                              | 10.89<br>(.004*)    | -2.48    | <.001*<br>* | -2.77    | <.001*<br>* | -.3      | .364    |
|             |            | Communication          | 13.85<br>(1.64) | 14.21<br>(1.41) | 14.55<br>(1.09)                             | 6.94<br>(.031*)     | -1.09    | .212        | -2.84    | .030        | -1.51    | .121    |
|             |            | Values/Ethics          | 8.70<br>(.88)   | 8.91<br>(.52)   | 8.85<br>(.57)                               | 2.80<br>(.247)      | -1.63    | .152        | -.97     | .455        | -1.41    | .273    |
|             | Ability    | Teamwork               | 17.15<br>(3.11) | 17.03<br>(3.73) | 19.27<br>(2.45)                             | 22.33<br>(<.001*)   | -.31     | .424        | -3.57    | <.001*<br>* | -3.52    | <.001** |
|             |            | Roles/Responsibilities | 10.03<br>(2.07) | 9.67<br>(2.29)  | 10.91<br>(1.49)                             | 9.91<br>(.007*)     | -1.11    | .152        | -2.66    | <.001*<br>* | -3.06    | <.001** |
|             |            | Communication          | 12.97<br>(2.07) | 12.48<br>(2.62) | 13.97<br>(1.59)                             | 14.53<br>(.001*)    | -.77     | .242        | -2.95    | <.001*<br>* | -3.57    | <.001** |
|             |            | Values/Ethics          | 8.36<br>(1.11)  | 8.30<br>(1.19)  | 8.70<br>(.77)                               | 4.04<br>(.133)      | -.29     | .545        | -1.56    | .61         | -2.07    | <.001** |
| O<br>T<br>A | Importance | Teamwork               | 20.00<br>(1.70) | 20.19<br>(1.58) | 20.65<br>(1.41)                             | 10.72<br>(.005*)    | -1.03    | .038        | -2.54    | <.001*<br>* | -2.59    | <.001** |
|             |            | Roles/Responsibilities | 11.46<br>(1.03) | 11.42<br>(.99)  | 11.81<br>(.80)                              | 8.88<br>(.012*)     | -.38     | .731        | -2.12    | <.001*<br>* | -2.71    | <.001** |
|             |            | Communication          | 14.15<br>(1.26) | 14.31<br>(1.41) | 14.62<br>(1.17)                             | 6.28<br>(.043*)     | -1.27    | .192        | -2.36    | .038        | -1.46    | .192    |
|             |            | Values/Ethics          | 8.85<br>(.61)   | 8.85<br>(.61)   | 8.88<br>(.59)                               | 2.00<br>(.368)      | .00      | 1.000       | -1.00    | .615        | -1.00    | .615    |
|             | Ability    | Teamwork               | 18.08<br>(3.22) | 18.19<br>(2.71) | 18.85<br>(2.6)                              | 3.97<br>(.137)      | -.24     | .423        | -1.29    | .115        | -2.1     | <.001** |

|                               |                 |                 |                 |                   |       |             |       |             |       |         |
|-------------------------------|-----------------|-----------------|-----------------|-------------------|-------|-------------|-------|-------------|-------|---------|
| <b>Roles/Responsibilities</b> | 9.69<br>(1.85)  | 9.81<br>(1.90)  | 10.65<br>(1.72) | 10.93<br>(.004*)  | -.14  | .385        | -2.68 | <.001*<br>* | -2.72 | <.001** |
| <b>Communication</b>          | 12.38<br>(1.94) | 13.08<br>(1.83) | 13.77<br>(1.82) | 17.29<br>(<.001*) | -2.17 | <.001*<br>* | -3.55 | <.001*<br>* | -2.36 | <.001** |
| <b>Values/Ethics</b>          | 8.31<br>(1.19)  | 8.42<br>(1.24)  | 8.50<br>(1.11)  | 4.20<br>(.122)    | -.65  | .308        | -1.32 | .308        | -.41  | .462    |

Note 1: Teamwork - Intraprofessional Teamwork; Roles/Responsibilities - Roles & Responsibilities for Collaborative Practice; Communication - Communication for Intraprofessional Practice; Values/Ethics - Values & Ethics for Intraprofessional Practice.

\*  $p < .05$ .

\*\*  $p < .017$ .

Regarding the open-ended feedback, all 33 OT students (100%) and 25 out of 26 OTA students (96.2%) provided at least one and up to three positive comments as “most beneficial” of the learning activity, for a total of 77 positive comments. In all, 18 out of 33 OT students (54.5%) and 13 out of 26 OTA students (50%) provided at least one and up to two negative comments as “least beneficial,” for a total of 34 negative comments. These findings indicate that more than twice as many positive comments were generated than negative comments overall. Positive themes that emerged included: *gain collaboration experience, share different perspectives, learn new knowledge, getting feedback, and learning the role of another profession*. Negative themes included: *insufficient time to meet, assignment organization, lack of prior contact before collaboration, lack of knowledge about the role of another profession, and others* related to time, space, and grading (see Table 4). When asked if the students would recommend this activity in the future, all OT and OTA students responded, “yes”.

**Table 4***Qualitative Themes from Student Comments*

|   | OT        | OTA       | Total     |
|---|-----------|-----------|-----------|
| <b>Most Beneficial Aspect of This Intraprofessional Activity</b>  |           |           |           |
| Gain collaboration experience                                     | 20        | 7         | 27        |
| Share different perspectives                                      | 13        | 12        | 25        |
| Learn new knowledge   | 5         | 7         | 12        |
| Getting feedback  | 1         | 4         | 5         |
| Learning the role of another profession                           | 6         | 2         | 8         |
| <b>Total</b>  | <b>45</b> | <b>32</b> | <b>77</b> |
| <b>Least Beneficial Aspect of This Intraprofessional Activity</b> |           |           |           |
| Lack of meeting time  | 4         | 7         | 11        |
| Assignment organization   | 9         | 0         | 9         |
| Lack of prior contact before collaboration                        | 4         | 0         | 4         |
| Lack of knowledge about the role of another profession            | 2         | 0         | 2         |
| Others*   | 2         | 6         | 8         |
| <b>Total</b>  | <b>21</b> | <b>13</b> | <b>34</b> |

Note: \*Includes- Activities were time consuming, meeting at a tight space, meeting was scheduled in early morning, activities were not graded, professionalism was not graded, student felt unable to contribute, difficulty resolving conflicts in collaboration, and lack of longitudinal collaboration.

**Discussion**

The current study developed a two-phase EBP learning module that incorporated important elements to enhance successful intraprofessional collaborative experiences, such as face-to-face interaction, partnerships/teamwork, and peer teaching. A successful intraprofessional collaboration curriculum should ensure that students can experience and practice these elements with each other throughout the learning phases. Our findings showed that EBP ability changes were evident after the phase II

collaboration in both OT and OTA students with a small effect size. The changes in perceived importance and perceived ability of intraprofessional collaboration were noted throughout the learning activity.

In Phase I, OT students took the *Evidence-Based Practice* didactic course, in which they learned the basic components of quantitative and qualitative research. The OT students had opportunities to explore principles of different types of research questions and study designs and were introduced to various types of measurements. The OTA students enrolled in the *Professional Issues in Occupational Therapy* course focused broadly on overall OT knowledge that prepared them for their Level II fieldwork. Within the didactic coursework, they learned how to locate journal articles with different databases, identified study populations, explored study limitations, and learned reference citations. Interestingly, neither OT nor OTA students showed statistically improved EBP ability from learning the regular didactic course materials (Phase I). A closer examination of the EBP ability test showed that the test reflected only limited components of evidence-based practice, in which it assessed the students' comprehension of basic concepts from reading a typical research paper (i.e., Abstract, Introduction, Methods, Results, Discussion, etc.). Therefore, the students' general evidence-based practice ability might not have been best represented in the EBP ability test at T2.

During Phase II, the paired OT and OTA students rated the credibility of the shared articles. In the face-to-face meeting, they had to select one quantitative article and complete a collaborative worksheet to identify the important component of the article, such as the background of the study, the inclusion/exclusion criteria, intervention and data collection process, outcome measurements used, how the results apply to practice, among other information. This Phase II intraprofessional collaborative activity offered specific information detailing how to utilize different components of a research article and was more aligned with the EBP ability test. Therefore, both OT and OTA students showed small but significant EBP ability improvement after the intraprofessional collaboration in Phase II (T3). Additionally, students specifically mentioned that the intraprofessional collaboration allowed them to learn more about breaking down research articles, finding certain information within an article, and discovering different ways to interpret an article. Both the OT and OTA instructors emphasized these EBP components' critical natures throughout the didactic course, thus solidifying their applicability during the Phase II intraprofessional collaboration process. This result is consistent with a recent study exploring intraprofessional collaboration in a nursing program. The author found that participants indicated that working with peers enables them to connect contents learned from the didactic course and increase content comprehension and application (George et al., 2020).

Two noteworthy areas showed improvement in Phase I. OT students showed improved *perceived importance* on Role/Responsibility, possibly because the *Evidence-Based Practice* course used various materials that emphasized potential OT and OTA partnerships in addressing clients' needs. In contrast, OTA students improved in *perceived ability* on Communication, possibly because the *Professional Issues in*

*Occupational Therapy* course covered multiple objectives to prepare students for Level II fieldwork and used multiple simulation labs that required students to review the simulated chart notes and provide feedback to one another. Therefore, their communication was enhanced throughout the regular didactic process.

Teamwork has been emphasized because it impacts patient outcomes and patient satisfaction (Will et al., 2019). Thus, that both OT and OTA students showed an improved *perceived ability* to engage in Teamwork following Phase II is a promising finding. Scheerer (2002) stressed using hands-on activities with teamwork-building in the Partnering model. In the current study, both the OT and OTA students had the chance to evaluate independently and then discuss face-to-face the selected articles' credibility. Scheerer (2002) also indicated that small group activities were an effective teaching method in developing partnering teamwork, which was employed in the current study with one OTA student paired with one to two OT students. Previous research has indicated that peer teaching effectively stimulates learning outcomes in the classroom setting in multiple disciplines. For example, an intraprofessional collaboration study found that dental students better understood dental hygienists' roles and had improved intraprofessional care attitudes after experiencing peer teaching (McComas & Inglehart, 2016). Another study of nursing professionals found that intraprofessional peer teaching improved students' self-efficacy, positively influencing the quality of care provided (Kirkpatrick et al., 2018). Further, a study showed that medical and pharmacy students' perceptions of interprofessional education improved after attending a 16-week peer teaching seminar (Lehrer et al., 2015). Therefore, the positive changes in the *perceived ability* of intraprofessional collaboration were expected when the peer teaching happened in Phase II. Therefore, developing a well-designed peer teaching experience in the OT profession can enhance intraprofessional collaboration and meet accreditation standards requiring OT and OTA graduates to work in an intraprofessional team.

Previous studies suggested that intraprofessional learning experiences should happen before graduation to prepare students for collaborative practice (Barnes et al., 2016; Jung, 2008). In the current study, improvement in *perceived ability* on Role/Responsibility was achieved after the Phase II learning activity, which is similar to Jung's study (2008), in which OT and OTA students were paired on fieldwork rotation and reported increased competence with a greater understanding of each other's roles. Both OT and OTA students highly valued this learning activity, with 100% recommending its continuance. Jelley et al. (2013) found communication to be the most important competency for intraprofessional collaboration. Face-to-face communication was highly desired in the current study. Both groups frequently noted that sharing different perspectives was one of the most beneficial aspects of the activity, and insufficient time to meet was the top least beneficial item. The OT students particularly benefited from the opportunity to "gain collaboration experience" from this activity. This finding is consistent with a previous work by Dennehy (2017). Educators should consider promoting intraprofessional collaborative practice by offering courses on respectful intraprofessional interaction. The embedded experiential learning can help establish strong foundational intraprofessional relationships (Carson et al., 2018) and may benefit future clinical partnerships.

### **Limitations and Future Study Suggestions**

The study used a convenience sample from one university, limiting the ability to draw conclusions about the general population. The study also used existing groups of OT students and OTA students, who were evaluated three times throughout the trimester. No control group was used for comparison. Future studies should consider adding control groups, incorporating multiple sites to increase sample size, and investigating the intraprofessional collaboration in various subjects and courses, such as clinical skills, community service, and simulation labs, among other topics.

The current study applied measurements adapted from the 2011 IPEC report identifying individual-level intraprofessional competencies. Future studies could examine intraprofessional collaboration that reflects individual and population perspectives and updated core competencies (IPEC, 2016).

In addition, although both the outcome measurements used in the current study possessed face validity and content validity, further psychometric property testing for both assessments would be beneficial. Also, the completed practice of EBP comprises further steps (e.g., evaluating the effectiveness and efficiency of service provided, etc.). Future studies could explore incorporating these steps to encourage opportunities for intraprofessional collaboration. A future study might also consider whether the number of fieldwork experiences completed would influence students' perceived importance and perceived ability to participate in intraprofessional collaboration. Last, further studies could examine how the students' perceived intraprofessional importance and ability develop over time and how they influence the corresponding service outcomes.

### **Implications for Occupational Therapy Education**

- Educators should consider promoting intraprofessional collaborative practice by offering courses on respectful interactions.
- Academic programs can enhance students' perceived importance and perceived ability of intraprofessional collaboration.
- Intraprofessional collaborative learning effectively improves EBP ability to read and use scientific articles in both OT and OTA students.

### **Conclusion**

The practical need for knowledge about intraprofessional education and evidence-based practice has never been more salient. The opportunities to contribute to the general science of intraprofessional collaboration are unparalleled. This study provided important information about OT and OTA students' perceived importance and perceived collaboration ability in learning the foundation of reading evidence-based articles. Educators should promote intraprofessional collaborative practice by offering courses that permit interactions between different levels of students and build intraprofessional partnerships along the education continuum.

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